

Listing of Claims

Claim 1 (original) A method for transmitting two related channels of signals through the air, the method comprising:

- modulating a first channel of signals with a first carrier frequency;
- modulating a second channel of signals with a second carrier frequency;
- combining the modulated first channel of signals and the second channel of signals through a high isolation combiner;
- transmitting the combined signals to a receiver system; and
- regenerating the first channel and the second channel of signals in the receiver system by separating on from the other.

Claim 2 (new) A dual carrier wireless transmitter apparatus, comprising:

- a first voltage controlled oscillator, having a first base band signal coupled to deviate said first oscillator frequency, thereby outputting a first modulated carrier signal;
- a second voltage controlled oscillator, having a second base band signal coupled to deviate said second oscillator frequency, thereby outputting a second modulated carrier signal, and
- a high isolation combiner coupled to combine said first modulated carrier signal and said second modulated carrier signal to a single antenna output.

Claim 3 (new) The apparatus of Claim 2 further comprising:

- a first amplifier coupled to amplify said first modulated carrier signal before input to said high isolation combiner, and
- a second amplifier coupled to amplify said second modulated carrier signal before input to said high isolation combiner.

Claim 4 (new) The apparatus of Claim 2 wherein said first voltage controlled oscillator further comprises a dielectric resonator oscillator.

Claim 5 (new) The apparatus of Claim 2 wherein said first voltage controlled oscillator further comprises a phase locked loop oscillator.

Claim 6 (new) The apparatus of Claim 2 further comprising:
an antenna, coupled to said antenna output, operative to radiate said combined first modulated carrier signal and said second modulated carrier signal by electromagnetic radiation.

Claim 7 (new) The apparatus of Claim 2 wherein said first base band signal deviates said first oscillator frequency by about 150 kilohertz.

Claim 8 (new) The apparatus of Claim 7 wherein said first modulated carrier signal and said second modulated carrier signal lie within the frequency band from 911.4 MHz to 918.4 MHz.

Claim 9 (new) The apparatus of Claim 2 wherein said first base band signal comprises analog audio signals.

Claim 10 (new) The apparatus of Claim 9 wherein said analog audio signals comprise frequency components in the range of 50 Hz to 20 kHz.

Claim 11 (new) The apparatus of Claim 2 wherein said first base band signal comprises a stream of digital data.

Claim 12 (new) A wireless receiver apparatus for demodulating a radio frequency signal, having a first modulated carrier signal and a second modulated carrier signal, into a first base band signal and a second base band signal, comprising:

- a first mixer coupled to down-convert the radio frequency signal to a first intermediate frequency signal;

- a first filter coupled to filter said first intermediate frequency signal, said first filter having a pass band of sufficient width to pass both of the down-converted first and second modulated carrier signals;

- a second mixer coupled to down-convert said filtered first intermediate frequency signal to a second intermediate frequency signal;

- a second filter coupled to filter said second intermediate frequency signal, said second filter having a pass band of such center frequency and width as to pass only the down-converted first modulated carrier signal, and

- a third filter coupled to filter said second intermediate frequency signal, and having a pass band of such center frequency and width as to pass only the down-converted second modulated carrier signal.

Claim 13 (new) The apparatus of Claim 12 further comprising:

- a first demodulator coupled to demodulate the filtered and down-converted first modulated carrier signal, and

- a second demodulator coupled to demodulate the filtered and down-converted second modulated carrier signal.

Claim 14 (new) The apparatus of Claim 12 wherein said first mixer is coupled to a first local oscillator.

Claim 15 (new) The apparatus of Claim 12 wherein said second mixer is coupled to a second local oscillator.

Claim 16 (new) The apparatus of Claim 12 further comprising:
an antenna, coupled to said first mixer, and operative to receive the radio frequency signal by electromagnetic coupling.

Claim 17 (new) The apparatus of Claim 12 wherein said second filter has a pass band of sufficient width to pass a frequency modulated signal that is deviated about 150 kilohertz.

Claim 18 (new) The apparatus of Claim 17 wherein said first filter has a pass band covering the frequency range from 911.4 MHz to 918.4 MHz.

Claim 19 (new) The apparatus of Claim 12 wherein the first base band signal comprises analog audio signals.

Claim 20 (new) The apparatus of Claim 19 wherein the analog audio signals comprise frequency components in the range of 50 Hz to 20 kHz.

Claim 21 (new) The apparatus of Claim 12 wherein the base band signal comprises a stream of digital data.

Claim 22 (new) A 900 MHz wireless stereophonic headphone system, comprising:
a base unit, further comprising;

- a left and right audio input connector for connecting a left base band signal and a right base band signal, said base band signals having an analog frequency response from 50 Hz to 20 kHz;

- a dual carrier wireless transmitter, further comprising;

- a left phase locked loop type voltage controlled oscillator having a center frequency between 902 MHz and 928 MHz, coupled to said left audio input connector to deviate said left oscillator frequency by about 150 kHz, thereby outputting a left modulated carrier signal;

- a right phase locked loop type voltage controlled oscillator having a center frequency between 920 MHz and 928 MHz, coupled to said right audio input connector to deviate said right oscillator frequency by about 150 kHz, thereby outputting a right modulated carrier signal;

- a left amplifier coupled to amplify said left modulated carrier signal;

- a right amplifier coupled to amplify said right modulated carrier signal

- a high isolation combiner coupled to combine said amplified left modulated carrier signal and said amplified right modulated carrier signal into a radio frequency signal, coupled to a single antenna output;

- a rechargeable battery for providing electrical power to the circuitry in said base unit;

- a first antenna coupled to said single antenna output for radiating said radio frequency signal by wireless electromagnetic transmission; to a wireless headphone unit, further comprising;

- a second antenna for receiving said radio frequency signal by electromagnetic coupling;

- a wireless receiver apparatus for demodulating said radio frequency signal into said left base band signal and said right base band signal, further comprising;

a left mixer coupled to down-convert said radio frequency signal to a first intermediate frequency signal;

a first filter coupled to filter said first intermediate frequency signal, said first filter having a pass band of sufficient width to pass both of the down-converted left and right modulated carrier signals;

a second mixer coupled to down-convert said filtered first intermediate frequency signal to a second intermediate frequency signal;

a left filter coupled to filter said second intermediate frequency signal, said left filter having a pass band of about 300 kHz and a center frequency aligned to pass only the down-converted left modulated carrier signal, and

a right filter coupled to filter said second intermediate frequency signal, and having a pass band of about 300 kHz and a center frequency aligned to pass only the down-converted right modulated carrier signal.

a left demodulator coupled to demodulate the filtered and down-converted left modulated carrier signal, and

a right demodulator coupled to demodulate the filtered and down-converted right modulated carrier signal.

a stereo amplifier coupled to amplify said demodulated left and right base band signals, and

a stereo headphone coupled to acoustically reproduce said amplified left and right base band signals.

Claim 23 (new) A method of transmitting a dual carrier wireless signal, comprising the steps of:

frequency modulating a first carrier signal with a first base band signal, thereby producing a first modulated carrier signal;

frequency modulating a second carrier signal with a second base band signal, thereby producing a first modulated carrier signal, and

combining said first modulated carrier signal and said second modulated carrier signal to a single antenna output in a high isolation combiner.

Claim 24 (new) The method of Claim 23 further comprising the steps of:

amplifying said first modulated carrier signal prior to said combining step, and

amplifying said second modulated carrier signal prior to said combining step.

Claim 25 (new) The method of Claim 23 wherein said frequency modulating steps are accomplished using a dielectric resonator oscillator.

Claim 26 (new) The method of Claim 23 wherein said frequency modulating steps are accomplished using a phase locked loop oscillator.

Claim 27 (new) The method of Claim 23 wherein said first base band signal deviates said first carrier by about 150 kilohertz.

Claim 28 (new) The method of Claim 27 wherein said first modulated carrier signal and said second modulated carrier signal lie within the frequency band from 911.4 MHz to 918.4 MHz.

Claim 29 (new) The method of Claim 23 wherein said first base band signal comprises analog audio signals.

Claim 30 (new) The method of Claim 29 wherein said analog audio signals comprise frequency components in the range of 50 Hz to 20 kHz.

Claim 31 (new) The method of Claim 23 wherein said first base band signal comprises a stream of digital data.

Claim 32 (new) A method of receiving and demodulating a radio frequency signal, having a first modulated carrier signal and a second modulated carrier signal, into a first base band signal and a second base band signal, comprising the steps of:

down-converting the radio frequency signal to a first intermediate frequency signal;
filtering said first intermediate frequency signal through a pass band of sufficient width to pass both of the down-converted first and second modulated carrier signals;

down-converting said filtered first intermediate frequency signal to a second intermediate frequency signal;

filtering said second intermediate frequency signal through a pass band of such center frequency and width as to pass only the down-converted first modulated carrier signal, and demodulating the first base band signal therefrom, and

filtering said second intermediate frequency signal through a pass band of such center frequency and width as to pass only the down-converted second modulated carrier signal, and demodulating the second base band signal therefrom.

Claim 33 (new) The method of Claim 32 further comprising the step of:
coupling the radio frequency signal through an antenna prior to said down-converting the radio frequency signal step.

Claim 34 (new) The method of Claim 32 wherein said filtering said second intermediate frequency signal steps employ a pass band of sufficient width to pass a frequency modulated signal that is deviated about 150 kilohertz.

Claim 35 (new) The method of Claim 34 wherein said filtering said first intermediate filter step employs a pass band covering the frequency range from 911.4 MHz to 918.4 MHz.

Claim 36 (new) The method of Claim 32 wherein the first base band signal comprises analog audio signals.

Claim 37 (new) The method of Claim 36 wherein the analog audio signals comprise frequency components in the range of 50 Hz to 20 kHz.

Claim 38 (new) The method of Claim 32 wherein the base band signal comprises a stream of digital data.